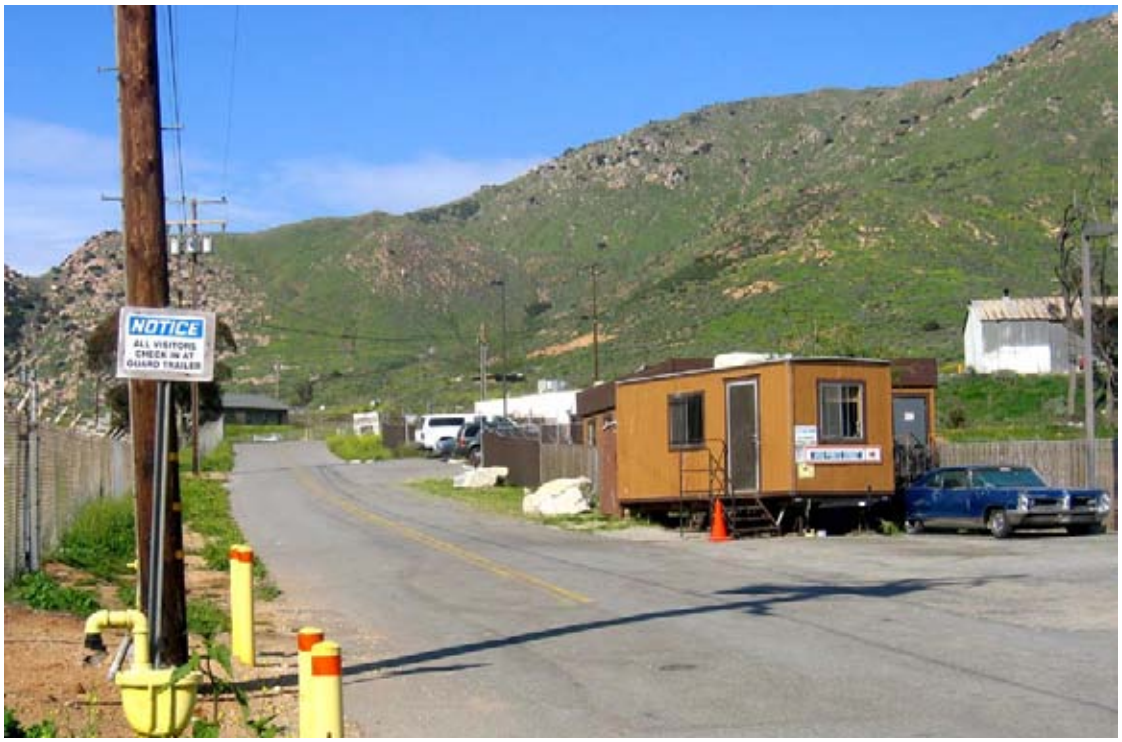
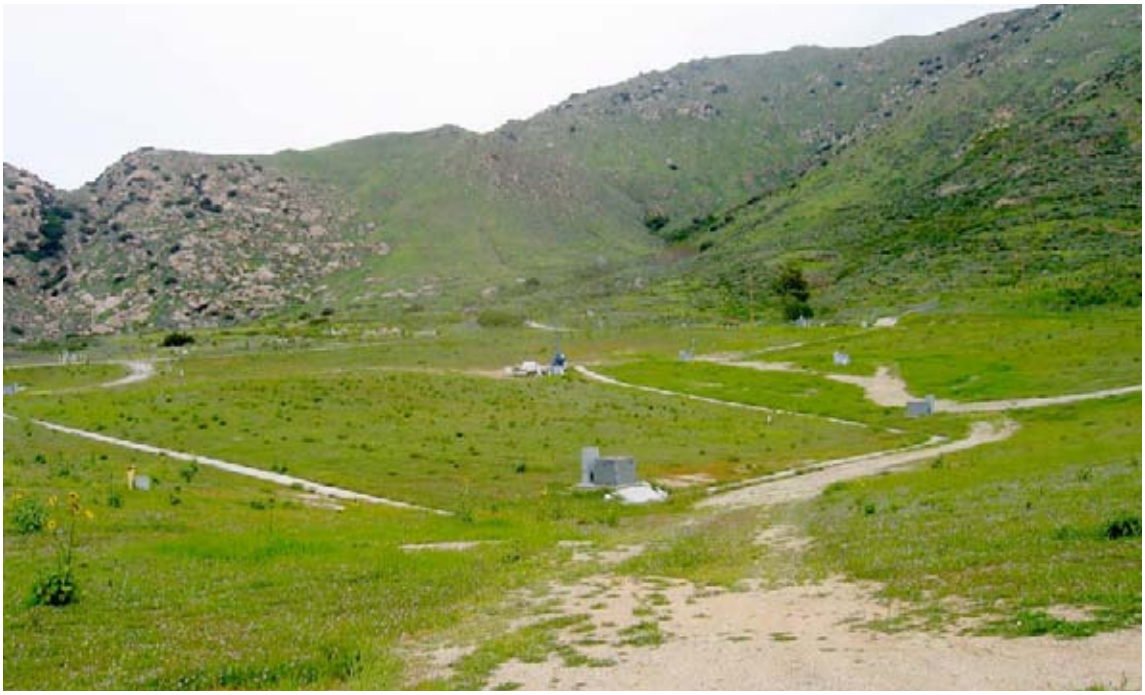
Appendix C
Site Inspection Photographs, April 10 and 11, 2006



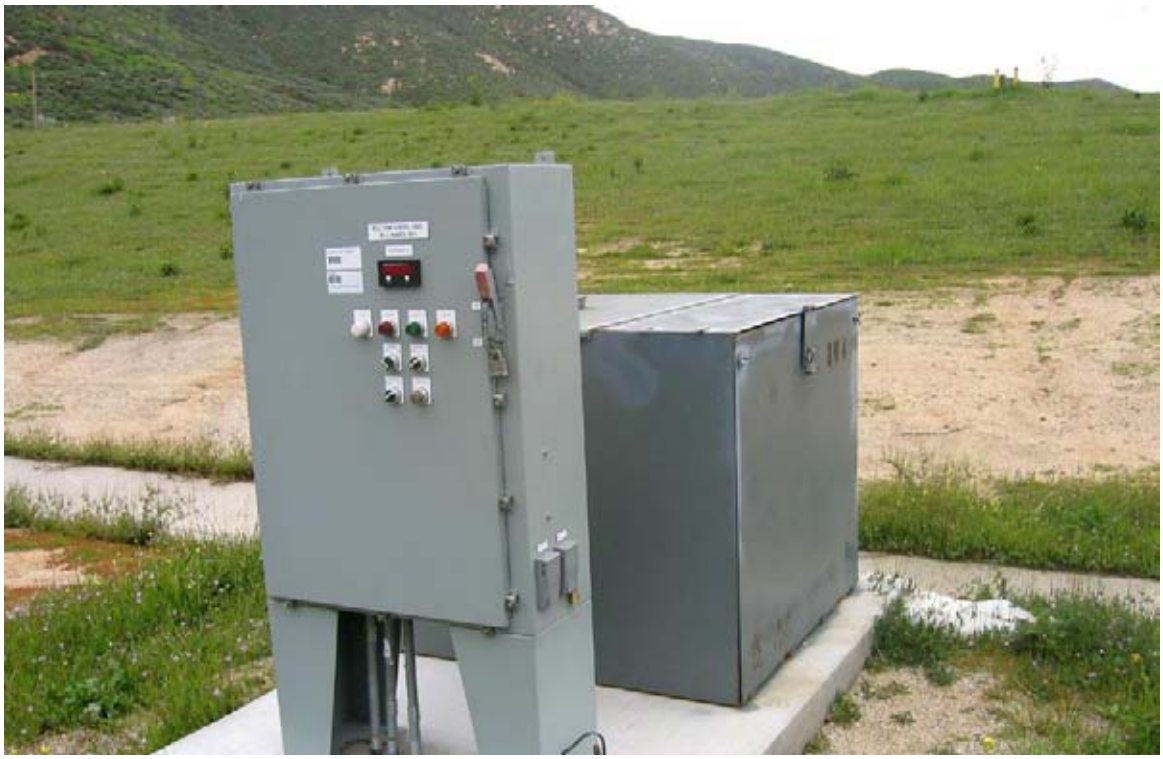
Access road to Zone 1. Security guard trailer on the right side of the road. Visitors to the site must sign in with the security guard before entering secured areas of the site.

Barbed-wire fence restricting access to Zone 1. This fence is normally locked to prevent access by unauthorized individuals to the site.

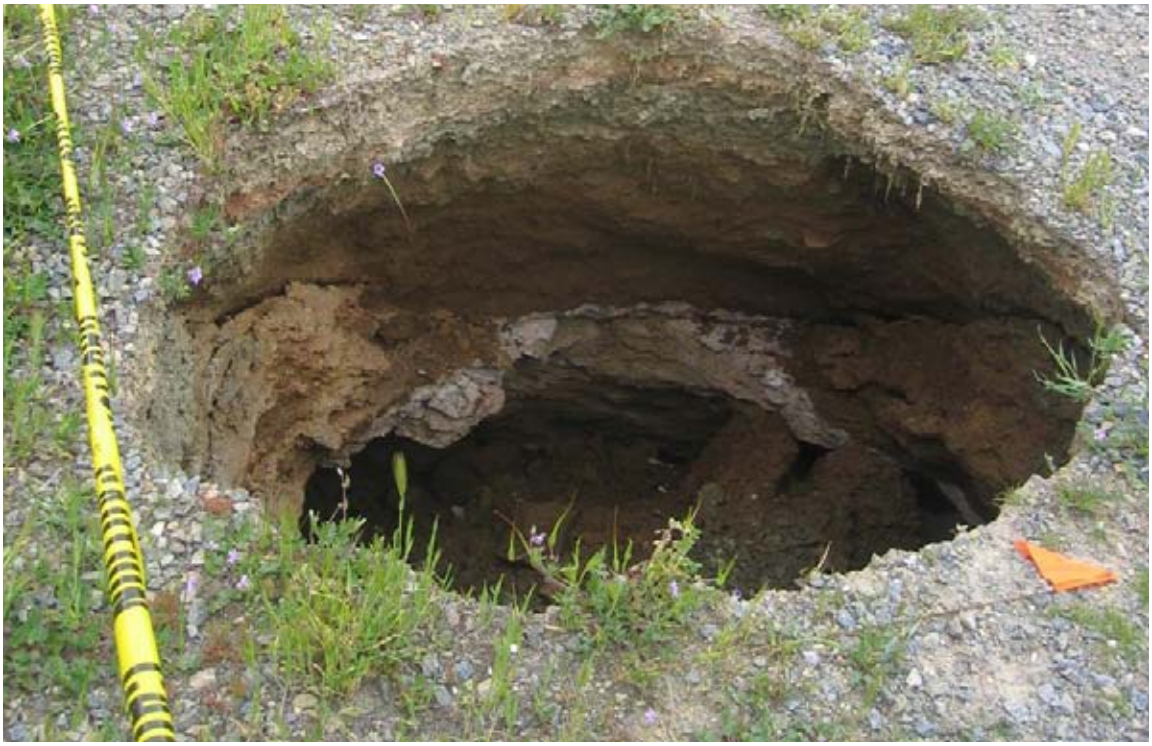
Access road surrounding former disposal area in Zone 1. The capped former disposal area is visible on the left side of the road, and the concrete-lined surface water drainage channel is visible on the right side of the road.



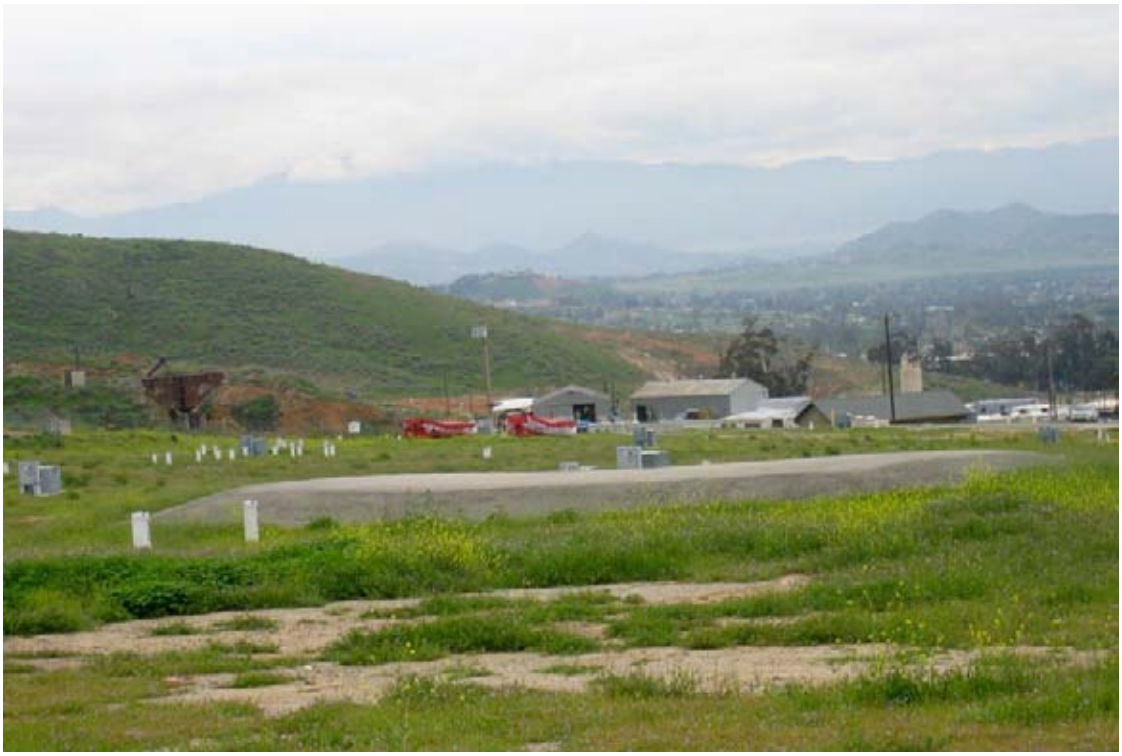
Northern former disposal area in Zone 1. Drainage gutters and extraction wells are visible. Also, well maintenance activities are being performed (center of photo).



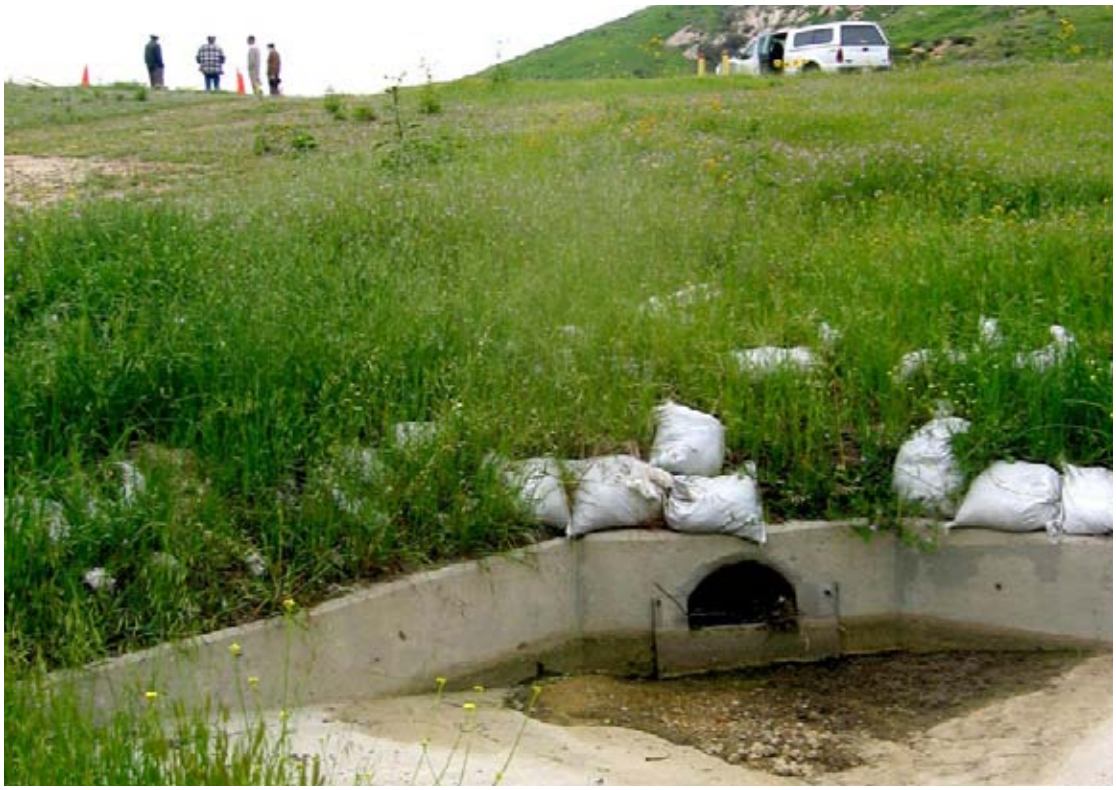
Extraction well OW-4 (Zone 1).



Sinkhole observed at the southwest corner of the northern former disposal area in Zone 1. The sinkhole is approximately 3 feet in diameter and approximately 5-feet deep. The cause of the sinkhole is being evaluated further by DTSC's contractor.

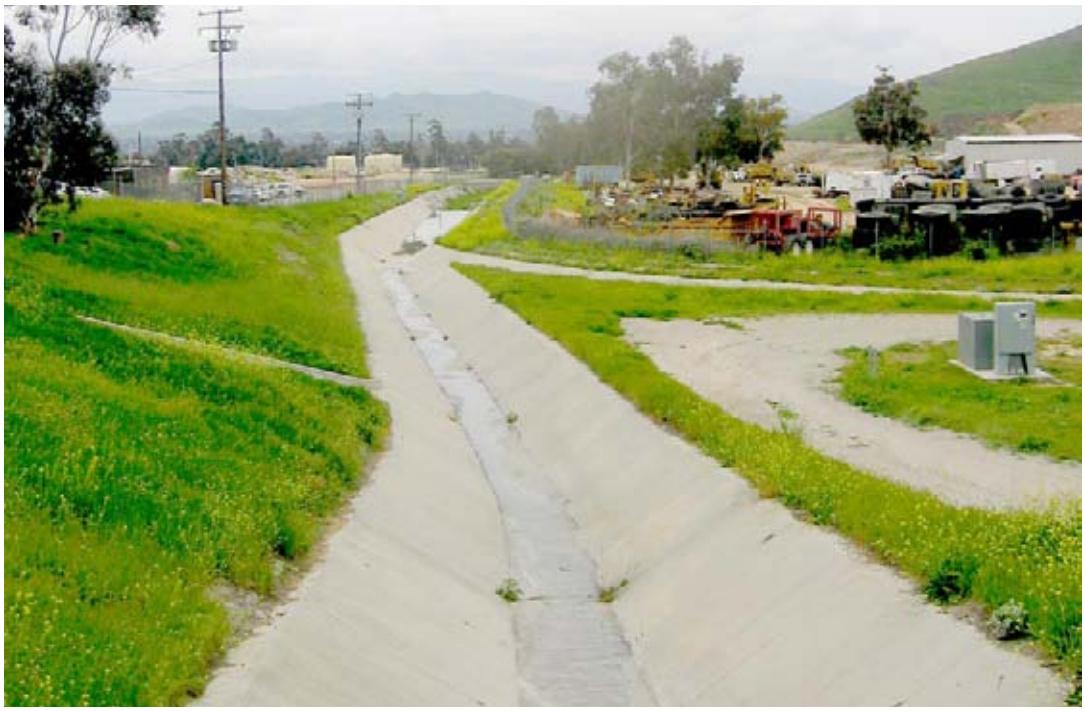


This area within the southern former disposal area in Zone 1 was capped with drill cuttings and asphalt when subsidence was observed in the early 1990s.

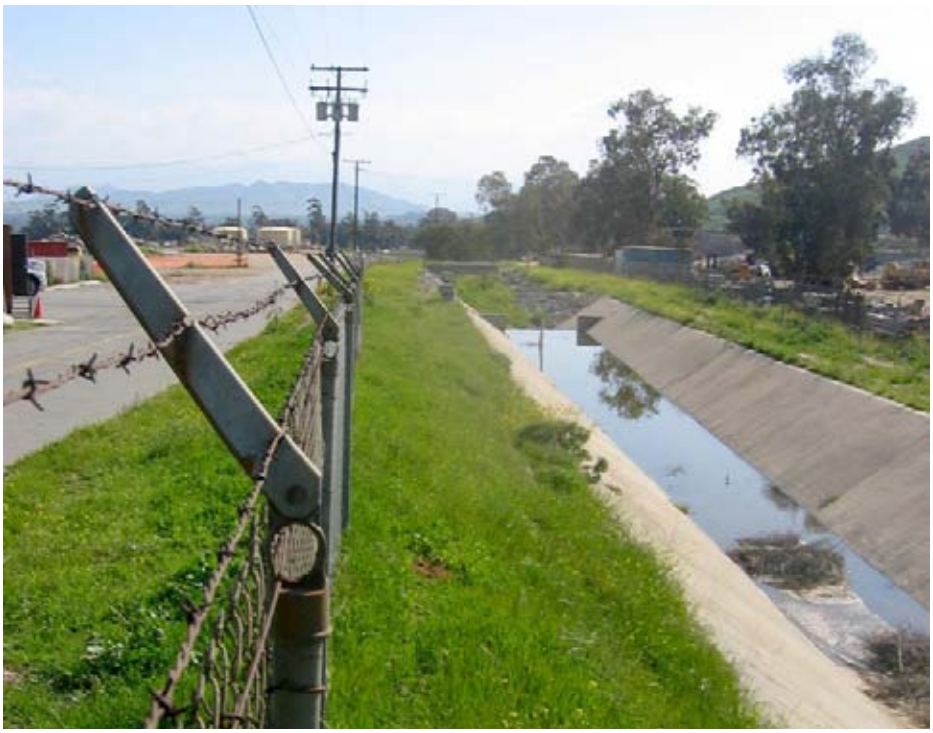


Surface water drainage collection area in northern disposal area in Zone 1. Surface water that drains from the (capped) former pond surface flows from this location to the perimeter drainage channel. Minimal debris was observed.

Surface water drainage channel on west side of former disposal area in Zone 1. The channel contains minimal debris and surface water.

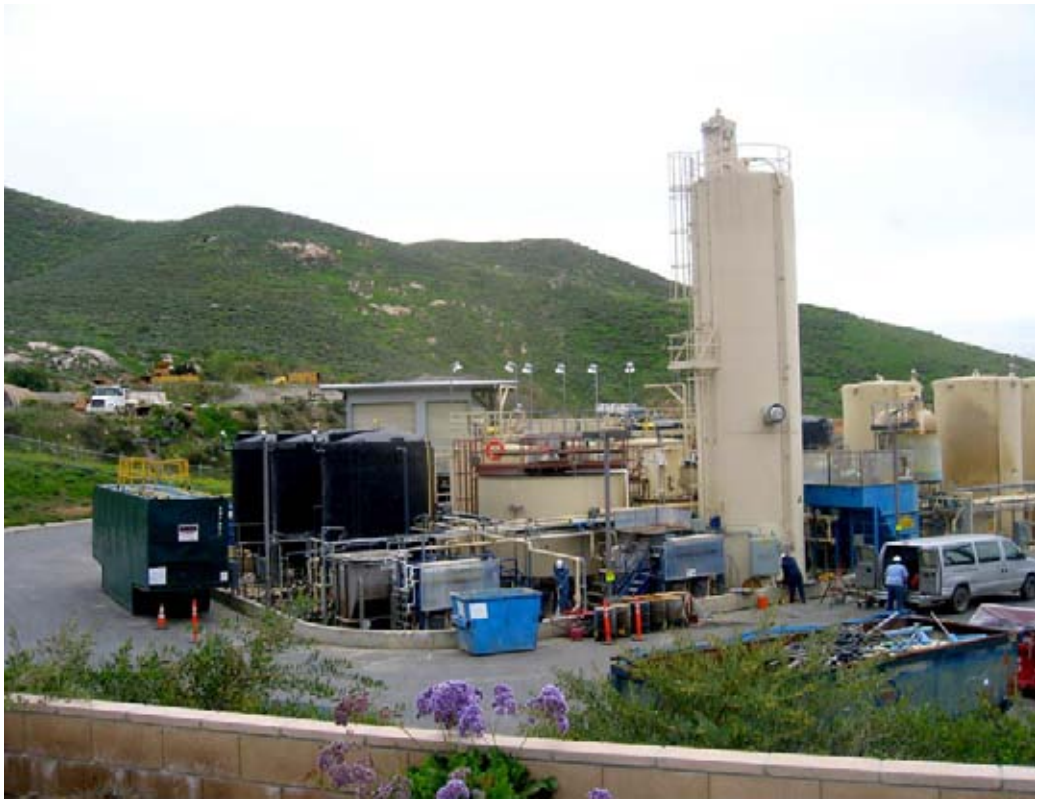


Surface water drainage channel upstream of the weir.



Surface water drainage channel upstream of the weir, showing areas of the channel that are not lined and contain vegetation downstream of the weir.

Quarry operations in Zone 2.



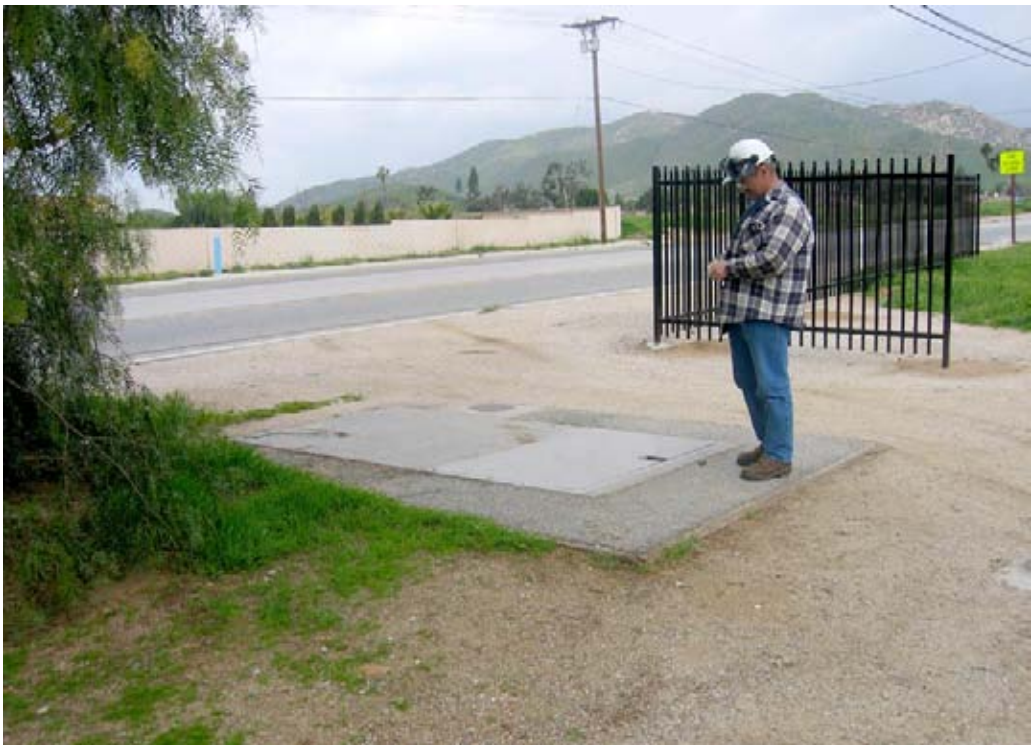
Pretreatment Plant in Zone 2.

Air stripper pilot test for removal of VOCs at the Pretreatment Plant in Zone 2.

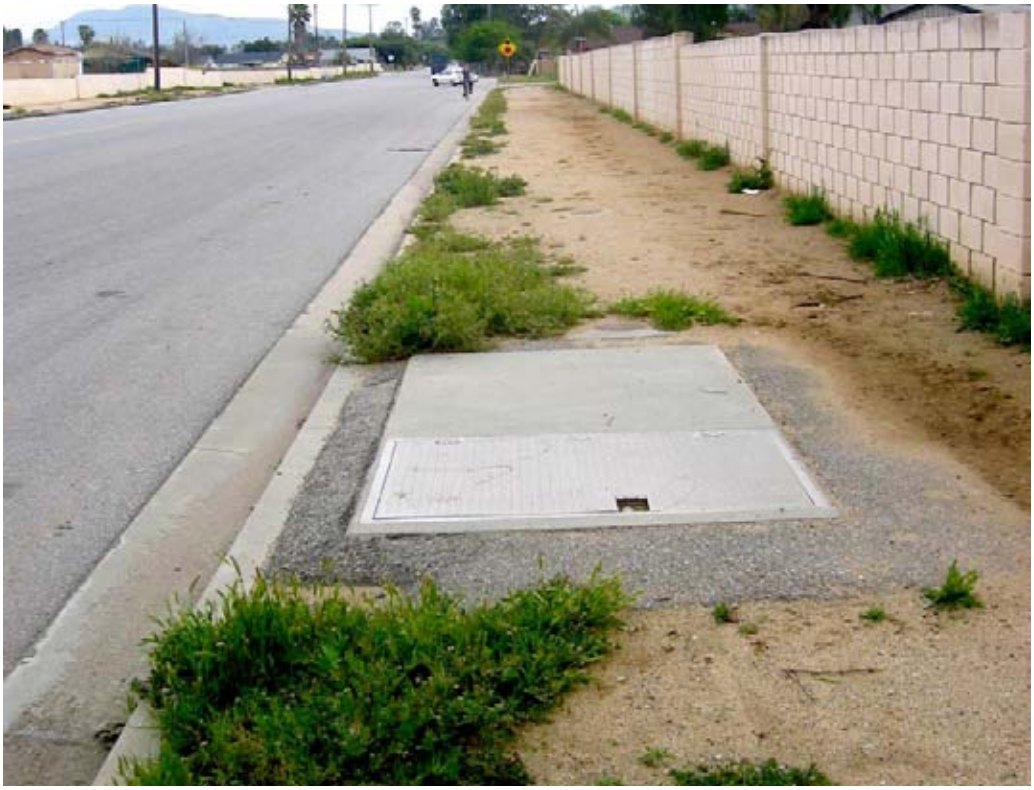
Extraction wells in Zone 3.

GAC units at the Lower Canyon Treatment Facility in Zone 3.

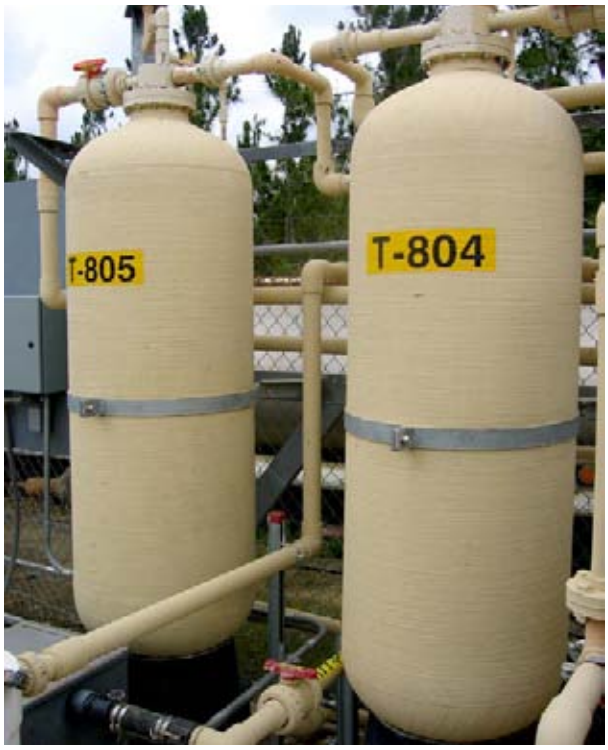
Storage tanks for water treated at the Pretreatment Plant and Lower Canyon Treatment Facility. Treated water is stored in these tanks before being discharged to the SARI pipeline.



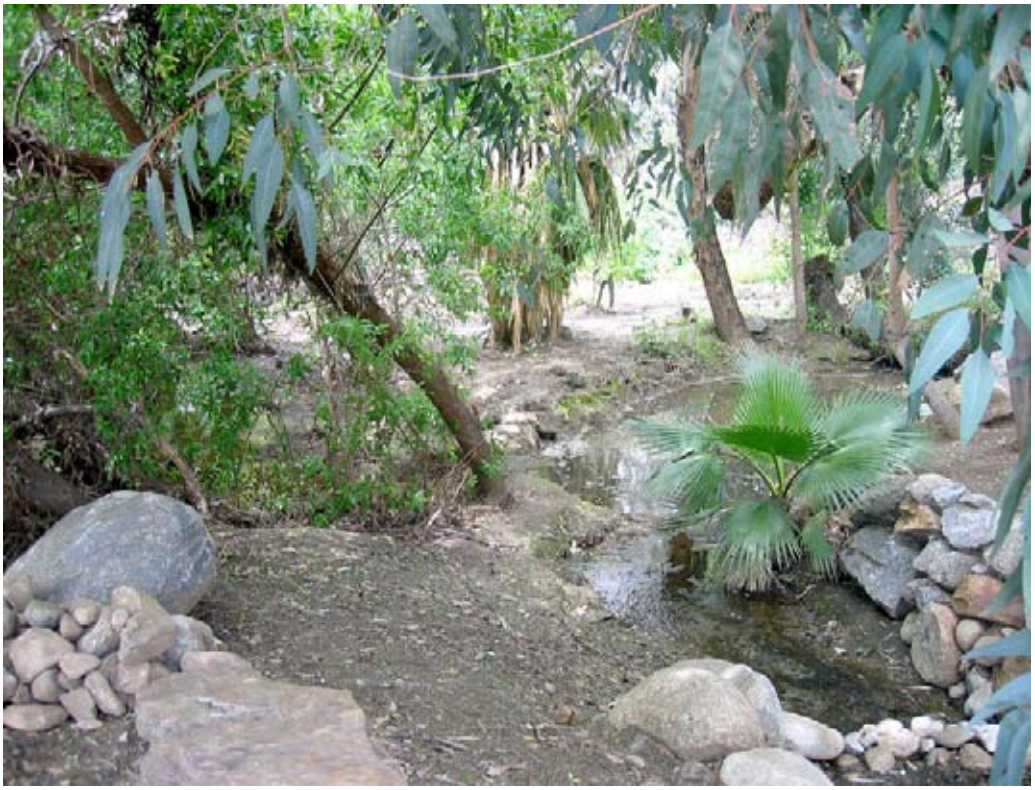
Zone 4 northern well (along Pyrite Street).



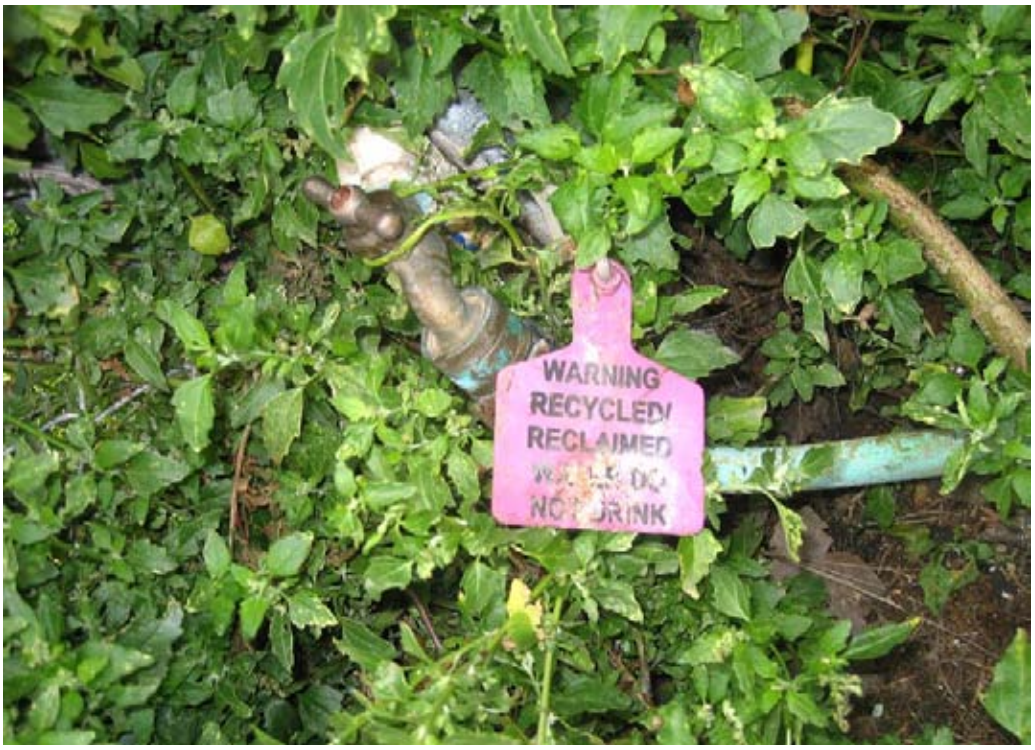
Zone 4 southern well (along Galena Street)



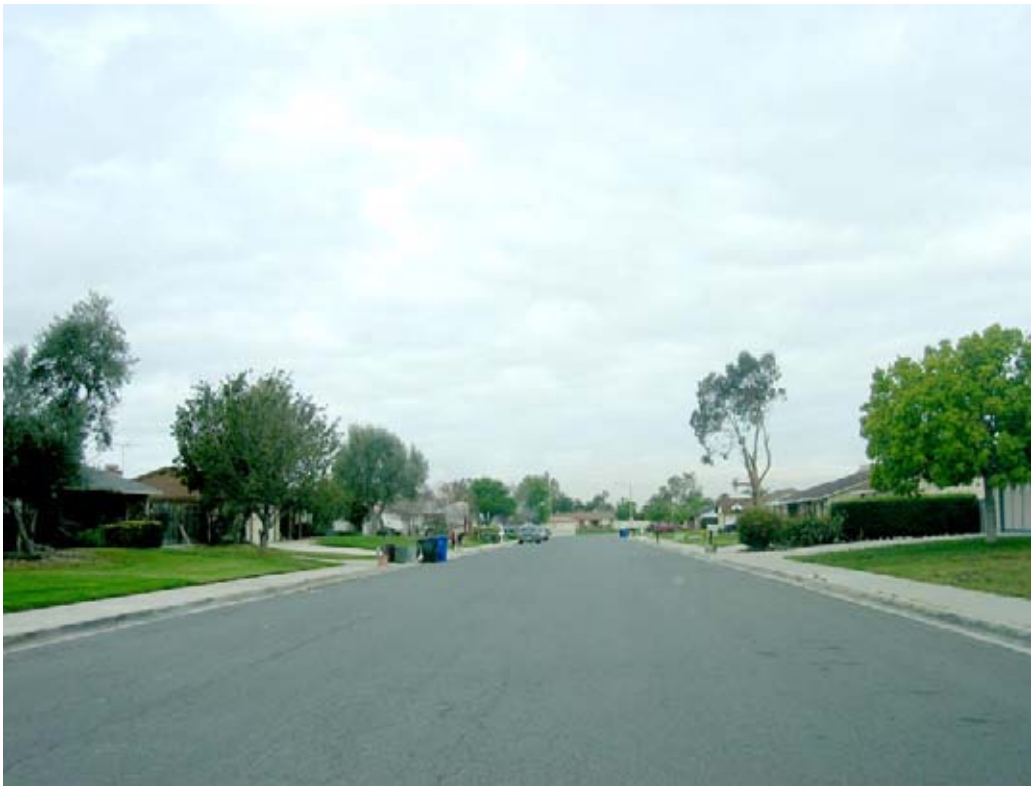
Community Wellhead Treatment System polymer resin canisters for perchlorate treatment in Zone 4.



Discharge point to Pyrite Creek for groundwater treated at the Community Wellhead Treatment System in Zone 4.



Warning on private wells that provide access to treated water from the Community Wellhead Treatment System in Zone 4. Treated water at these wells is to be used for irrigation purposes only.



Stonewood Lane in the Glen Avon community in Zone 4.

Appendix D
Interview Summary Forms

Five-Year Review Interview Record			**Interviewee:** Roger Paulson/DTSC	
Site Name		**EPA ID No.**	**Date of Interview**	**Interview Method via**
Stringfellow Superfund Site		CAT080012826	April 7, 2006	Phone ☒ Fax/email ☐ In person ☐
Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Charnjit Bhullar	USEPA Region 9	(415) 972-3960	Bhullar.Charnjit@epa.gov	75 Hawthorne Street San Francisco, CA 94105
Alexa Stamets	CH2M HILL, as rep of USEPA	(510) 587-7717	Alexa.Stamets@ch2m.com	155 Grand Ave, Suite 1000 Oakland, CA 94612
David Hodson	CH2M HILL, as rep of USEPA	(510) 587-7598	David.Hodson@ch2m.com	155 Grand Ave, Suite 1000 Oakland, CA 94612

Interview Questions

What is your current role as it relates to the site? What is your overall impression of the work conducted at the site to date? (general sentiment)

Response: Mr. Paulson serves as the Project Manager for the Remedial Investigation/Feasibility Study that is focused on Zone 4. Mr. Paulson is also involved with the engineering unit, which provides design and O&M services for the treatment units and on call services. Mr. Paulson's overall impression is that the remedial systems in place are mitigating the migration of contaminants in groundwater from the source zone to Zone 4.

What is the current status of construction? Have any problems or difficulties been encountered that have impacted construction progress or implementability?

Response: Current activities within Zone 4 include the completion of the remedial investigation, which includes monitoring well installation, cone penetration test (CPT) advancement, hydropunch groundwater sampling, and piezometer installation. Problems that impact the characterization of perchlorate in Zone 4 include the need for characterization of unidentified secondary sources of perchlorate, which has been detected up-, down-, and cross-gradient of the site. Scheduling difficulties have caused some delay in the completion of the remedial investigation.

Have there been routine communications or activities (site visits, inspections, reporting activities, etc) conducted by your office regarding the site? If so please give purpose and results.

Response: Mr. Paulson visits the site approximately three times a month for 1 to 2 days at a time. The nature of the visits is primarily to "kick-off" the remedial investigations. Additionally, the interviewee is periodically involved with treatment system O&M.

What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Have any new or emerging COCs been identified? If so, have they impacted the effectiveness of the remedy?
Response: Mr. Paulson confirmed that perchlorate concentrations have stabilized in groundwater downgradient of the site. No new contaminants of concern (COC) (besides perchlorate) were identified in Zone 4 prior to the remedial investigation, which is currently ongoing.

Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.
Response: Full time onsite O&M oversight is provided by Ziggy Kostecki/DTSC and DTSC's O&M contractor, Earth Tech. There are numerous O&M activities related to the monitoring and extraction well network and three treatment systems.

Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details.
Response: O&M difficulties have been documented in monthly and annual summary reports.

Would you say that O&M and/or sampling efforts have been optimized? Please describe how improved efficiency has or has not occurred.
Response: Mr. Paulson is currently involved with a remedial investigation for Zone 4 that is being conducted to optimize the O&M and sampling efforts for that area of the site.

Are you aware of any institutional controls, site access controls, new ordinances in place, changes in actual or projected land use, complaints being filed or unusual activities at the site? If so, please describe in detail.
Response: Mr. Paulson is fairly certain that all of the Glen Avon community households are supplied with Jurupa Community Sanitation District (JCSD) service (city water), and that the community has been advised that private wells should not be used as a source of drinking water.

Have any problems been encountered which required, or will require changes to this remedial design or ROD?
Response: The identification of possible secondary sources of perchlorate in groundwater may affect the remedial design goals and/or ROD for Zone 4. Mr. Paulson postulated that this would be addressed subsequent to the secondary source assessment being developed for Zone 4 perchlorate contamination. Currently, resin is added at the Community Wellhead Treatment System (CWTS) to treat elevated perchlorate concentrations.

Do you have any comments, suggestions, or recommendations regarding the site?
Response: Mr. Paulson recommended further discussions with Ziggy Kostecki/DTSC and Allen Winans/DTSC.

Five-Year Review Interview Record			**Interviewee:** Allen Winans/DTSC	
Site Name		**EPA ID No.**	**Date of Interview**	**Interview Method via**
Stringfellow Superfund Site		CAT080012826	April 17, 2006	Phone ☒ Fax/email ☐ In person ☐
Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Charnjit Bhullar	USEPA Region 9	(415) 972-3960	Bhullar.Charnjit@epa.gov	75 Hawthorne Street San Francisco, CA 94105
Alexa Stamets	CH2M HILL, as rep of USEPA	(510) 587-7717	Alexa.Stamets@ch2m.com	155 Grand Ave, Suite 1000 Oakland, CA 94612

Interview Questions

1. **What is your current role as it relates to the site? What is your overall impression of the work conducted at the site to date? (general sentiment)**

Response: Mr. Winans is the Unit Chief of the Hydrologic Unit of the Stringfellow Branch at Department of Toxic Substances Control (DTSC). In this capacity, he oversees (1) the investigation of contamination at the site; (2) O&M activities; (3) remedial investigation for perchlorate; (4) contracts for all activities related to hydrogeology; and (5) database, GIS, and drafting tasks for the site.

2. **What is the current status of construction? Have any problems or difficulties been encountered that have impacted construction progress or implementability?**

Response: Construction of the selected remedy is complete. Additional investigation has been necessary in recent years due to an initially poor remedial investigation of the site. Recent investigations have included installation and monitoring of additional monitoring wells and evaluations of the existing extraction system. DTSC is in the process of updating the Draft Supplemental Feasibility Study (SFS) Report based on new information obtained through recent investigations at the site. This report will address additional remedial action for Zones 1 through 3, including installation of an engineered cap, a new treatment system, and additional upgradient interception. The Draft SFS Report is scheduled to be resubmitted by the end of 2006. Additional investigation is currently underway in Zone 4 to build upon the characterization activities previously performed in this area of the site.

3. **Have there been routine communications or activities (site visits, inspections, reporting activities, etc) conducted by your office regarding the site? If so please give purpose and results.**

Response: (Not asked.)

4. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Have any new or emerging COCs been identified? If so, have they impacted the effectiveness of the remedy?

Response: With respect to Zone 1, so many wastes were historically placed in the former disposal ponds that contaminant concentrations in groundwater do not change significantly over time. For Zone 2, volatile organic compounds (VOC) and semivolatile organic compounds (SVOC) concentrations are decreasing with time. The trends in perchlorate concentrations in Zone 2 are less certain. For Zone 3, contaminant concentrations are decreasing with time. Contaminant concentrations have improved significantly in Zone 4. Trichloroethene (TCE) is detected below the maximum contaminant level (MCL), chloroform concentrations are low, and perchlorate concentrations have decreased over time. New contaminants of concern (COC) at the site include perchlorate; pesticides; 1,4-dioxane; and n-nitrosodimethylamine (NDMA). Although methyl tertiary butyl ether (MTBE) has also been detected in monitoring wells in Zone 4, the source of the MTBE is a service station, and is not associated with Stringfellow.

5. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

Response: (Not asked.)

6. Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details.

Response: (Not asked.)

7. Would you say that O&M and/or sampling efforts have been optimized? Please describe how improved efficiency has or has not occurred.

Response: (Not asked.)

8. Are you aware of any institutional controls, site access controls, new ordinances in place, changes in actual or projected land use, complaints being filed or unusual activities at the site? If so, please describe in detail.

Response: By mid-2002, all households in Glen Avon (Zone 4) were connected to the Jurupa Community Sanitation District (JCSD) for water supply, and private wells were converted for use for irrigation purposes only (no service to houses themselves). Approximately 22 to 23 houses were converted at this time. Mr. Winans is not aware of any restrictions on the future uses of the existing private wells, but knows that the county has a restriction prohibiting installation of additional wells in this area.

9. Have any problems been encountered which required, or will require changes to this remedial design or ROD?

Response: No response.

10. Do you have any comments, suggestions, or recommendations regarding the site?

Response: Mr. Winans suggested that the 2002 and 2003 Annual Reports be reviewed as part of the five-year review for Stringfellow.

Five-Year Review Interview Record			**Interviewee:** Allen Wolfenden/DTSC	
Site Name		**EPA ID No.**	**Date of Interview**	**Interview Method via**
Stringfellow Superfund Site		CAT080012826	April 19, 2006	Phone ☒ Fax/email ☐ In person ☐
Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Charnjit Bhullar	USEPA Region 9	(415) 972-3960	Bhullar.Charnjit@epa.gov	75 Hawthorne Street San Francisco, CA 94105
Alexa Stamets	CH2M HILL, as rep of USEPA	(510) 587-7717	Alexa.Stamets@ch2m.com	155 Grand Ave, Suite 1000 Oakland, CA 94612

Interview Questions

What is your current role as it relates to the site? What is your overall impression of the work conducted at the site to date? (general sentiment)
Response: Mr. Wolfenden is the Chief of the Stringfellow Branch at Department of Toxic Substances Control (DTSC). His overall impression of the work conducted at the site to date is excellent.

What is the current status of construction? Have any problems or difficulties been encountered that have impacted construction progress or implementability?
Response: The discovery of perchlorate in Zone 4 has required installation of additional treatment components at the Community Wellhead Treatment System (CWTS).

Have there been routine communications or activities (site visits, inspections, reporting activities, etc) conducted by your office regarding the site? If so please give purpose and results.
Response: (Not asked.)

What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Have any new or emerging COCs been identified? If so, have they impacted the effectiveness of the remedy?
Response: (Not asked.)

Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.
Response: (Not asked.)

Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details.
Response: (Not asked.)

Would you say that O&M and/or sampling efforts have been optimized? Please describe how improved efficiency has or has not occurred.
Response: Interim improvements have been made to the existing pretreatment plant (PTP), such as additional treatment components for pesticide removal. A filter press on the system was also replaced. A new PTP is currently being designed, and is scheduled for construction in 2011 or 2012.

Are you aware of any institutional controls, site access controls, new ordinances in place, changes in actual or projected land use, complaints being filed or unusual activities at the site? If so, please describe in detail.
Response: (Not asked.)

Have any problems been encountered which required, or will require changes to this remedial design or ROD?
Response: (Not asked.)

Do you have any comments, suggestions, or recommendations regarding the site?
Response: (Not asked.)

Five-Year Review Interview Record			**Interviewee:** Ziggy Kostecki/DTSC	
Site Name		**EPA ID No.**	**Date of Interview**	**Interview Method via**
Stringfellow Superfund Site		CAT080012826	April 11, 2006	Phone ☐ Fax/email ☐ In person ☒
Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Charnjit Bhullar	USEPA Region 9	(415) 972-3960	Bhullar.Charnjit@epa.gov	75 Hawthorne Street San Francisco, CA 94105
Alexa Stamets	CH2M HILL, as rep of USEPA	(510) 587-7717	Alexa.Stamets@ch2m.com	155 Grand Ave, Suite 1000 Oakland, CA 94612

Interview Questions

1. **What is your current role as it relates to the site? What is your overall impression of the work conducted at the site to date? (general sentiment)**

Response: Mr. Kostecki oversees the operations and maintenance activities that are performed onsite, coordinates with contractors for all field activities that are performed onsite, and interfaces with the community when community members have questions or concerns regarding the site.

2. **What is the current status of construction? Have any problems or difficulties been encountered that have impacted construction progress or implementability?**

Response: Construction of the remedy is complete. The onsite treatment systems are upgraded as needed. For example, aging tanks on the pretreatment plant (PTP) system have been replaced with cone bottom tanks. The interim pesticide removal system was also added to the PTP, and is in the process of being finalized (through installation of rapid mix and flocculator). There is also a plan to install an air stripper on the PTP to minimize the release of volatile organic compounds (VOC) to the atmosphere. The granulated activated carbon (GAC) units on the Community Wellhead Treatment System (CWTS) will be replaced later this year (2006) due to rusting. Difficulties associated with construction progress include the responsiveness of the contractor for on-site O&M and the physical constraints of the existing PTP. Limited space at the PTP impedes the speed of construction of new components on the system.

3. **Have there been routine communications or activities (site visits, inspections, reporting activities, etc) conducted by your office regarding the site? If so please give purpose and results.**

Response: (Not asked.)

4. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing? Have any new or emerging COCs been identified? If so, have they impacted the effectiveness of the remedy?

Response: The monitoring data suggest that trichloroethene (TCE) is being captured in Zone 4, and that concentrations are decreasing in the north and south wells in Zone 4. It is difficult to establish a trend in Zones 1, 2, and 3 because some of the wells in these areas of the site were only installed 8 years ago; additional monitoring will assist in determining trends in these areas. The new contaminants of concern (COC) at the site include perchlorate, dioxanes, and n-nitrosodimethylamine (NDMA). These constituents will be addressed in the new PTP.

5. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

Response: There is a continuous O&M presence. Earth Tech performs O&M at the site. The contractor is generally onsite between 40 and 72 hours a week (to operate the PTP system, the duration of which depends on groundwater levels in Zones 1 and 2). The O&M contractor is on-call 24 hours a day, 7 days a week to respond to emergencies or system malfunctions at the site. Site inspections are performed daily. In addition, a security presence is onsite between 7 A.M. and 5 P.M. Monday through Friday. Security inspections are performed on an hourly basis when onsite security is not present to ensure trespassers are not present onsite.

6. Have there been unexpected O&M difficulties or costs at the site in the last five years? If so, please give details.

Response: There have been several O&M difficulties over the last 5 years. Elevated pesticides were detected in filter cake at the PTP system, which resulted in much of the filter cake requiring incineration. A pesticide removal system was added to the PTP to treat extracted groundwater for pesticides before the groundwater went through subsequent treatment at the PTP, and to limit the volume of pesticide-rich filter cake generated through treatment.

Thirty-three extraction wells were installed in 1998. Subsequent operation of these extraction wells resulted in increased loads to the treatment systems. In addition, the discovery of perchlorate in groundwater in Zone 4 in 2001 resulted in the addition of resin canisters at the CWTS to treat perchlorate. These canisters require replacement approximately every 2 months at a cost of approximately $12,000 per replacement event.

7. Would you say that O&M and/or sampling efforts have been optimized? Please describe how improved efficiency has or has not occurred.

Response: Yes. Further groundwater monitoring should be performed to identify trends in concentrations of new constituents recently identified at the site.

8. Are you aware of any institutional controls, site access controls, new ordinances in place, changes in actual or projected land use, complaints being filed or unusual activities at the site? If so, please describe in detail.

Response: There is a constant security presence, and a fence surrounds the former disposal area and treatment systems to prevent access to these areas of the site. New housing developments have been constructed north of the site (north of the Jurupa Mountain Range). Mr. Kostecki has not received any complaints regarding the sites, and directs any concerns he receives from the community regarding the site to his supervisor, Mr. Allen Wolfenden.

9. Have any problems been encountered which required, or will require changes to this remedial design or ROD?

Response: There are problems that have been encountered that will require changes to the Record of Decision (ROD). Several contaminants (perchlorate, pesticides, dioxanes, and NDMA) have recently been identified as contaminants of concern at the site, and the next ROD will need to address treatment of these contaminants.

10. Do you have any comments, suggestions, or recommendations regarding the site?

Response: Work related to design of the new PTP should continue to address new COCs.

Appendix E
Institutional Controls Review

Institutional Controls at the Stringfellow Superfund Site

PREPARED FOR: **U.S. Environmental Protection Agency, Region 9**

PREPARED BY: **CH2M HILL**

DATE: **July 28, 2006**

Institutional controls (ICs) are nonengineering methods by which access to contaminated environmental media is restricted. This technical memorandum summarizes the results of an evaluation of ICs for the Stringfellow Superfund Site (also referred to as "site").

To date there have been four Record of Decision (ROD) documents issued pertaining to the site. Institutional controls have not been selected as part of the remedy in the previous decision documents. However, briefing materials for the First ROD (issued in 1983) indicate that the State of California acquired the property to facilitate site cleanup and placed restrictions on the future use of the property as recorded in the property title. Records indicate that the State of California owns three parcels associated with the site (APN#s 173-170-003, 173-170-011 and 173-170-012). The preliminary title reports for these three parcels are provided in Attachment E1. These preliminary title reports do not reveal any recorded environmental restrictions on the subject properties.

Further research was conducted to determine if ICs had ever been implemented at the site. A document index for the site was obtained from the United States Environmental Protection Agency Superfund Records Center. A review of this index, and many documents identified in the index, did not reveal that ICs had been recorded for the site.

Summary of IC Evaluation from Second Five-Year Review

The Second Five-Year Review Report was issued in 2001. The review evaluated ICs for each zone within the site. ICs for Zones 1, 2, and 3 were incorrectly identified in the Second Five-Year Review Report, which identified the following as ICs that were in place and preventing exposure: (1) sitewide fencing; (2) provision of bottled water; and (3) enhancing the connection to public water supply. In fact, these controls are not ICs but are engineering controls.

The Second Five-Year Review Report notes that the ICs in Zone 4 were incomplete in preventing exposure to the newly discovered perchlorate contamination and recommended that the ICs be enhanced by reviewing and revising Riverside County well restrictions to ensure that no households are being exposed to perchlorate contamination. The Second Five-Year Review Report also noted that ICs in Zone 4 were incomplete in preventing exposure to perchlorate contamination because the perchlorate groundwater investigation was ongoing.

As part of the perchlorate groundwater investigation, the state identified 22 households with private drinking water wells. These households were provided with bottled drinking water and were subsequently connected to the public utility water system. The private wells are periodically sampled as part of the site Non-Routine Groundwater Monitoring Program. Reports from the April 2002, June 2002, and September 2005 nonroutine groundwater monitoring events were reviewed during the third five-year review to support this evaluation of ICs for the site.

Deficiencies and Recommendations

Deed Restrictions in Zone 1

The preliminary title reports provided in Attachment E1 do not show any environmental restrictions or covenants associated with the properties owned by Department of Toxic Substances Control (DTSC). Deed restrictions such as Land Use Covenants (LUC) should be selected in a decision document and put in place for properties owned by DTSC. LUCs should be properly executed and periodically reviewed to ensure continued existence. Deed notices, while nonenforceable, should also be filed in the public land records to alert anyone searching the records of important information about the property. The deed notices may discourage inappropriate future land use.

Deed Restrictions in Zones 1 and 2

Exposure to volatile organic compound (VOC) vapors from migration to indoor air has become a concern in recent years. As stated in Section 6.2.4 of this Five-year Review Report, TCE concentrations in Zones 1 and 2 were found to exceed the screening levels for potential vapor intrusion. While there are currently no permanent buildings or structures in Zones 1 and 2, the potential for future exposure to VOCs in indoor air exists. Therefore, it is recommended that a LUC or deed restriction be selected in a future decision document and placed on public record to notify future land owners of the potential for indoor air concerns and to restrict buildings from being constructed in these areas until an evaluation of the indoor air pathway can be performed.

Well Restrictions in Zone 4

A data set provided by DTSC and subsequent conversations with the County of Riverside Department of Environmental Health (RDEH) verified that 22 residences in Zone 4 with private wells were connected to the local municipal water supply system. Although the Glen Avon residences that previously relied on private wells as a source of drinking water are now connected to public water supply and these wells are believed to be used for irrigation purposes only, interviews with DTSC management and the RDEH revealed that there are no legally-enforceable restrictions on use of existing private wells in the Glen Avon community in Zone 4. An appropriate IC for existing private wells in Zone 4 would be an informational flyer or public notice distributed to the owners and/or occupants of residences with private wells to notify them of the concerns associated with groundwater contamination uses of water at these wells, or other appropriate methods to be determined.

Any member of the public who wishes to install a new well in Zone 4 must apply for a well permit through the RDEH. RDEH's current policy is to deny all applications for installation

of domestic wells within a previously determined boundary. Well permits are granted for agricultural or monitoring purposes only within this boundary. The boundary is based on a plume map distributed as part of a 1986 memo from the RDEH. The 1986 plume boundary is presented in Attachment E2. This boundary should be updated based on current plume boundary information for future well permitting decisions.

Nonroutine Groundwater Monitoring in Zone 4

Groundwater monitoring should continue at private wells in Zone 4.